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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/942,131	08/29/2001	Robert Alan Hoult	03142-P0060A	6577

24126 7590 02/10/2006

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EXAMINER	
SUNG, CHRISTINE	
ART UNIT	PAPER NUMBER
2884	

DATE MAILED: 02/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/942,131	HOULT ET AL.	
	Examiner	Art Unit	
	Christine Sung	2884	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 January 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-13 and 25-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-13 and 25-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Response to Amendment

1. The amendment filed on January 17, 2006 has been entered.

2. The Request For Continued Examination filed on January 17, 2006 has been entered.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-6, 13 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dukor (US Patent 6,274,871) in view of Schanz (US Patent 6,396,048 B1).

Regarding claims 1 and 25, Dukor discloses an IR microscope (See Figure 3) comprising a sample stage (element 90), optical components (elements 72, 70, beamsplitter in box 52, etc.) for guiding analyzing radiation (element 54) so that it is incident on a sample (element 10) to be analyzed which is carried on said stage (see figure 3), and optical components (elements 74, 76, 78), for guiding radiation from the sample to a detector (element 62)

Wherein the detector (element 62) comprises an array of individual detector elements (element 92). Dukor further discloses an array of pixels or detection elements, and describes an example of a 64 x 64 array. However, Dukor does not limit the size of detection array, and further states that such a variable is dependent upon the desired detection resolution (column 6, lines 26-30).

Dukor does not specify that the outputs of the detector elements are directly fed in parallel to an image processing means. However, Schanz et al. discloses individual detector

elements (column 2, lines 37-39, figure 1, element 10), the output of the detector elements (figure 2, out put from element 52) being fed in parallel as each element is read out individually to processing means (element 30) for processing the detector element outputs. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the parallel processor as disclosed by Schanz with the invention disclosed by Dukor as parallel image processing would increase the speed at which the data is processed.

Regarding claims 3-6 Dukor discloses an array of detector elements (elements 92 and 62). It is inherent that a detector array includes elements or pixels (element 92) in a linear arrangement that are carefully spaced rows and columns, as such pixels are individually addressed.

Regarding claim 13, Schanz discloses a processor (element 30) that processes output signals received from the detector array.

5. Claim 26-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dukor (US Patent 6,274,871) in view of Schanz (US Patent 6,396,048 B1) further in view of Iddan (US Patent 5,512,749 A).

Regarding claim 26, Dukor in view of Schanz discloses the limitations set forth in claim 25 but does not specify that the detector is located in a Dewar typed vessel. However Iddan discloses that the detector elements can be located in a Dewar type vessel (column 2, lines 35-40). One of ordinary skill in the art would be motivated to use a Dewar type vessel to house the detector elements in order to cool the detector to reduce effects of the detector heating that lead to erroneous detection data.

Regarding claim 27 Iddan discloses each detector element corresponds to a pixel and thus is in a 1:1 relationship, meaning that the center to center spacing of adjacent detector elements is equal to the pixel pitch (see figure 2).

Regarding claim 28, Iddan discloses an assembly (Figure 1, element 18) that can be moved into or out of the beam of radiation in order to change the magnification provided by the optical elements of the microscope (Column 3, lines 44-55).

Regarding claim 29, Iddan further discloses that the magnification assembly is located between the objective mirror (Figure 1, element 44) and its intermediate focus (element 28).

Regarding claim 30, Iddan further discloses that the magnification assembly includes a reflecting element (Figure 1, element 44) that reflects the beam of radiation away from its normal direction and a component that receives the reflected radiation (element 26).

Regarding claim 31, Iddan discloses the claimed invention except for a second magnifying component. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have included a second magnifying component, since it has been held that mere duplication of the essential working parts of device involves only routine skill in the art. *St Regis Paper Co. v. Bemis Co.,* 549 F2d 833, 193 USPQ 8(CA 71977).

Regarding claims 32-33, Iddan does not specify the use of spherical or plane mirrors, however it is well known in the optical art to use these types of mirrors for directing and magnifying radiation.

Regarding claim 34, the magnifying assembly (element 18) is moveable by the rotation about an axis. However, Iddan does not disclose the use of the operative or inoperative state. Although he does not specify that the magnifying assembly has 2 states, an operative an

inoperative state, it would have been obvious to one having ordinary skill in the art at the time the invention was made to define an in use state and a nonuse state, as it is only a matter of convention.

Regarding claims 35-36, Iddan discloses a mirror (element 44) that has two operative positions, one that allows the CCD camera to detect an image, and another that allows for magnification and detection of IR radiation. Iddan does not specify that the magnification assembly is the element that causes a position in which the radiation can propagate to the detector without magnification. However, since the operative positions of the mirror function similarly as the claimed magnification element, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the mirror element that rotates about 45 degrees about an axis.

Regarding claims 37 and 38, Iddan discloses a cold shield (element 36) that is responsible for reducing spurious IR radiation impinging on the detector (see column 3, lines 63-67). Although he does not specify that the shield has 2 states, an operative an inoperative state, it would have been obvious to one having ordinary skill in the art at the time the invention was made to define an in use state and a nonuse state, as it is only a matter of convention.

Regarding claim 39, Iddan further discloses optical elements (element 26) where a beam of rays to be detected passes and the desired radiation is focused onto the detector. Although Iddan does not specify the use of a plane mirror, it is well known in the art to use various types of mirrors and lenses to direct and focus desired radiation onto a detector.

Regarding claim 40, Dukor discloses an IR microscope (See Figure 3) comprising a sample stage (element 90), optical components (elements 72, 70, beamsplitter in box 52, etc.) for

guiding analyzing radiation (element 54) so that it is incident on a sample (element 10) to be analyzed which is carried on said stage (see figure 3), and optical components (elements 74, 76, 78), for guiding radiation from the sample to a detector (element 62),

Wherein the detector (element 62) comprises an array of individual detector elements (element 92). Dukor further discloses an array of pixels or detection elements, and describes an example of a 64 x 64 array. However, Dukor does not limit the size of detection array, and further states that such a variable is dependent upon the desired detection resolution (column 6, lines 26-30). Further Dukor discloses the use of a CCD (column 2 lines 46-49) that inherently has a plurality of individual detector elements or pixels that are disposed in a spaced relationship. Dukor does not specify that the center to center spacing is equal to or a multiple of the pixel pitch and further does not disclosed that the outputs of the detector elements are directly fed in parallel to an image processing means with its own detection circuitry. However, Schanz discloses an array of individual detector elements (column 2, lines 37-39, figure 1, element 10), the output of the detector element (see figure 2, output from element 52) being fed in parallel (figure 2) to processing means (element 30) for processing the detector element outputs. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the parallel processor as disclosed by Schanz with the invention disclosed by Dukor as parallel processing would increase the speed at which the data is processed.

However, Dukor in view of Schanz et al. does not specify that the center to center spacing is equal to or a multiple of the pixel pitch. Iddan discloses each detector element corresponds to a pixel and thus is in a 1:1 relationship, meaning that the center to center spacing of adjacent detector elements is equal to the pixel pitch (see figure 2). One of ordinary skill in the

art would be motivated to use the pixel relationship as disclosed by Iddan with the invention as disclosed by Dukor in view of Schanz in order to proportionally detect radiation with respect to the image produced to reduce distortions to the detected image.

Regarding claim 41, Dukor discloses that the use of a CCD (column 2, lines 46-49) which inherently is made of a photoconductive element.

Regarding claim 42, Iddan discloses a shield (column 2, lines 40-45), for shielding at least one of the detector elements from unwanted radiation (column 2, lines 40-45). Although it does not explicitly state that the shield is in an operative or inoperative state, the shield is like a shutter and has the ability to change in size and therefore can open to an optimum operative state.

Regarding claim 43, Iddan discloses that the shield is located internal to the Dewar vessel. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have placed the shield external to the Dewar vessel, since it has been held that rearranging parts of an invention only involves routine skill in the art. *In re Japikse,* 181 F2d 1019, 86 USPQ 70 (CCPA 1950).

6. Claims 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dukor (US Patent 6,274,871) in view of Schanz (US Patent 6,396,048 B1) further in view of Dumas (US Patent 5,712,685).

The limitations set forth in the corresponding independent claims have been described in the abovementioned paragraphs.

Regarding claims 8-12 Dukor in view of Schanz does not specifically disclose that the detector elements are located at a position corresponding to a point on a grid. However, Dumas discloses a device to enhance detector resolution, including the use of a grid wherein detector

elements are positioned corresponding to points on the grid (figure 3, Column 6, lines 5-19) and can be fashioned in various of grid/detector element configurations. Further Dumas discloses that the grid pattern is rectangular (figure 3). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the specific detector device as disclose by Dumas with the invention disclosed by Dukor in view of Schanz, in order to enhance image resolution.

7. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dukor (US Patent 6,274,871) in view of Schanz (US Patent 6,396,048 B1) further in view Taylor (US Patent 5,091,646 A)

Regarding claim 7, Dukor in view of Schanz discloses the limitations set forth in claim 5, but does not disclose that the detector elements are staggered relative to an adjacent row. Staggered rows of detectors is a conventional detector configuration. Taylor discloses such a conventional detector configuration (see claim 19).

8. Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dukor (US Patent 6,274,871) in view of Schanz (US Patent 6,396,048 B1) further in view Harris (US Patent 5,123,953).

Regarding claim 44, Dukor discloses an IR microscope (See Figure 3) comprising a sample stage (element 90), optical components (elements 72, 70, beamsplitter in box 52, etc.) for guiding analyzing radiation (element 54) so that it is incident on a sample (element 10) to be analyzed which is carried on said stage (see figure 3), and optical components (elements 74, 76, 78), for guiding radiation from the sample to a detector (element 62)

Wherein the detector (element 62) comprises an array of individual detector elements (element 92). Dukor further discloses an array of pixels or detection elements, and describes an example of a 64 x 64 array. However, Dukor does not limit the size of detection array, and further states that such a variable is dependent upon the desired detection resolution (column 6, lines 26-30). Dukor does not specify that the outputs of the detector elements are fed in parallel to a processing means and further does not disclose an assembly moveable between an operative and inoperative position by rotation about an axis in order to change the magnification provided by the optical elements of the microscope. However, Schanz discloses individual detector elements (column 2, lines 37-39), the output of the detector element (Figure 2, output from element 52) being fed in parallel to processing means (element 30) for processing the detector element outputs. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the parallel processor as disclosed by Schanz with the invention disclosed by Dukor as parallel processing would increase the speed at which the data is processed. Dukor in view of Schanz does not disclose an assembly movable between an operative an inoperative position by rotation about an axis in order to change the magnification provided by the optical elements of the microscope. Harris discloses a microscope that is moveable between an operative and inoperative position to change the magnification provided by the optical elements (i.e. condenser) of the microscope (claims 1 and 18). One of ordinary skill in the art would be motivated to have such an assembly so as to have an adaptable field of view.

Response to Arguments

9. Applicant's arguments filed January 17, 2006 have been fully considered but they are not persuasive.

10. Applicant argues that the Dukor reference teaches an array of 4096 detector elements and that such an array is extremely expensive. Examiner respectfully disagrees. Dukor does not require that 4096 detector elements, but rather merely stated such an array as an example. Dukor determines the amount of detector elements by the resolution desired and the object that is being detected (column 6, lines 8- 17).

11. Further applicant argues that the limitation where "the outputs of the detector elements being directly fed in parallel to procession circuitry" is not shown nor is obvious. However, again examiner respectfully disagrees. After taking a closer look at Dukor, he discloses parallel detection and/or processing (column 1, lines 31-44), and states that such methods are favorable because such methods do not require point to point matching, reducing the time required to detect/process data. Dukor does not disclose the specifics of such parallel processing, yet Schanz discloses a conventional approach to such processing.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christine Sung whose telephone number is 571-272-2448. The examiner can normally be reached on Monday- Friday 7-3 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Christine Sung
Examiner
Art Unit 2884

CS

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